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CLAIMS

1. Direct injection internal combustion engine having

    NOx-reducing exhaust-gas aftertreatment,

    internal exhaust-gas recirculation,

    layered lean operation and

    swirl in the incoming fresh gas,

    having a swirl axis running substantially transverse to the piston movement

    characterized in that due to charging an intermixture of the residual

    exhaust-gas portion with the fresh air drawn in takes place.

2. Internal combustion engine according to Claim 1, **characterized in that**
    the swirl is a tumble movement.

3. Internal combustion engine according to Claim 1 or 2, **characterized in
    that** the swirl is produced by a tumble plate in the intake channel.

4. Internal combustion engine according to any of the preceding claims,
    characterized in that it is ignited externally and is an Otto engine.

5. Internal combustion engine according to any of the preceding claims,
    characterized in that a layer charging operation is provided.

6. Internal combustion engine according to any of the preceding claims,
    characterized in that it additionally has external exhaust-gas
    recirculation.

7. Internal combustion engine according to Claim 5, **characterized in that**
    the external exhaust-gas recirculation is cooled and/or provided with a
    control valve.

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8.   Internal combustion engine according to any of the preceding claims, **characterized in that** the swirl axis lies in the region of 75° to 105° of the piston movement.

9.   Internal combustion engine according to any of the preceding claims, **characterized in that** exhaust-gas aftertreatment takes place by means of a NOx storage catalyst.

10.   Internal combustion engine according to any of the preceding claims, **characterized in that** exhaust-gas aftertreatment is controlled by a NOx sensor.

11.   Internal combustion engine according to any of the preceding claims, **characterized in that** internal exhaust-gas recirculation takes place by adjustment of intake valve opening times in the direction of early.

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